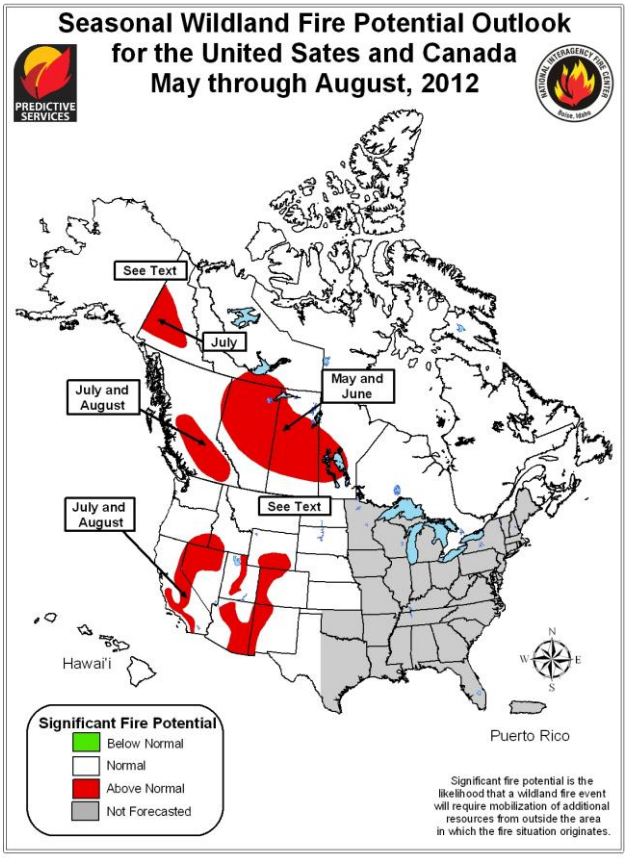
2012 Western U.S. and Canadian Wildland Fire Potential Assessment

On April 17 through 19, 2012 U.S. and Canadian fire, weather and climate specialists convened virtually for the National Seasonal Assessment. A forecast of seasonal significant fire potential for the western U.S. and Canada was developed as part of this collaboration. This briefing document includes a description of existing climate forecasts, fuels conditions, and influences on resource requirements.

Significant Fire Potential Forecast (May – August 2012)

The map below shows the significant fire potential forecast for May through August 2012 across the western U.S. and Canada. Significant fire potential is defined as the likelihood that a wildland fire event will require mobilization of additional resources from outside the area in which the fire situation originates. Areas highlighted as above normal are likely to require more than the usual number of external resource mobilizations.



Significant Fire Potential

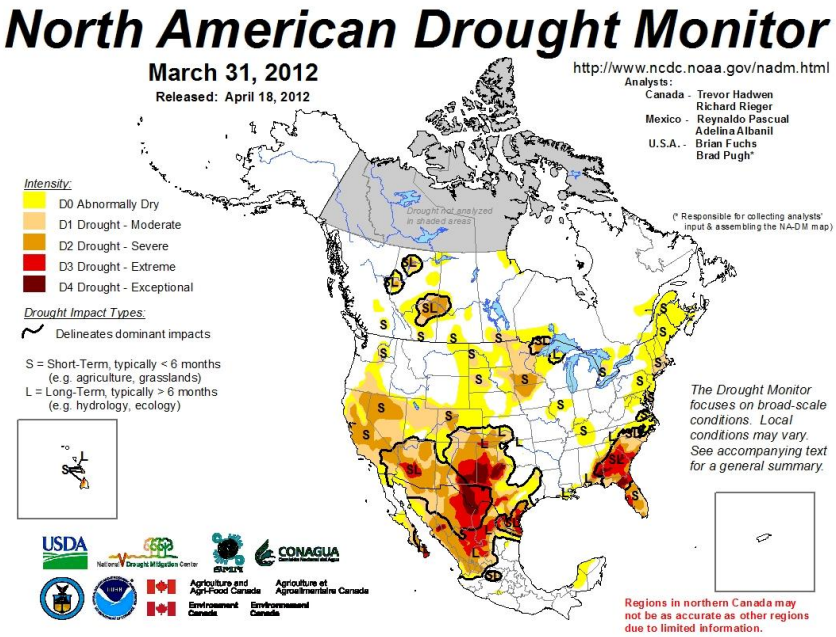
For the 2012 fire season in the U.S. expect areas of above normal significant fire potential to include portions of Arizona and western New Mexico stretching up the Rocky Mountains and encompassing portions of western Colorado and south central Wyoming. Another area of above normal significant fire potential is likely to develop from the southern California mountains and stretch northward across western Nevada and into southeastern Oregon and southwest Idaho. Other areas including the central Utah mountains and the west side of Hawaii's Big Island have the potential to develop above normal significant fire potential.

Areas outside of the western U.S. that are likely to continue or develop above normal significant fire potential include areas of the southeastern U.S. mainly focused around Florida and the south Atlantic Coast; as well as the western Great Lakes region.

The 2012 Canadian fire season is expected to have above normal significant fire potential develop in May and June across much of the interior west, including portions of Alberta, Saskatchewan, Manitoba and the Northern Territories. This will transition to the Yukon Territories and British Columbia in July. After July above normal conditions will likely diminish in the Yukon Territories but continue through August in interior British Columbia.

Drought Conditions

An abnormally dry winter has left a number of areas with some level of drought as fire season approaches. A great deal of improvement has occurred over much of central and eastern Texas, however drought continues across west Texas and has spread west and north encompassing much of the southwestern quarter of the U.S. Extreme to exceptional drought has persisted across Florida, Georgia and Alabama, with abnormally dry to severe drought conditions also occurring up most of the Atlantic Seaboard. Also an area stretching from the western Great Lakes into eastern Montana and Wyoming is experiencing dry to severe drought conditions.



Though Canada has little significant drought heading into this season, the areas of drought that are present are centered over much of Alberta and somewhat into western Saskatchewan. These drought conditions coincide with high ending Drought Codes from last year and are the primary reason this area has been forecasted for above normal potential in the late spring and early summer.

Snowpack

Winter across the west mostly produced below normal snowpacks. Across a large portion of the west stretching from Arizona to southern Idaho and Oregon, there were significantly below normal snowpacks. In some areas as low as 40 percent of normal. However, as the winter developed the majority of the Pacific Northwest did see normal to somewhat above normal snowpacks accumulate.

Snowpack across Canada is similar to what occured across the northern tier of the United States. Western Canada saw the same late season snowfall that allowed the Pacific Northwest and Alaska to reach above normal snowpacks. Eastward, into the prairie provinces, the snowpack was significantly below normal and did not provide much relief for drought conditions or compaction of fine fuels.

Fuels Conditions

La Nina conditions from last growing season that extended into the fall and winter of 2012 have had a significant effect on fuels conditions across the U.S. At this time last year abundant fine fuels across the south central U.S. stretching into New Mexico led to significant fire occurence. However, because of the drought conditions fine fuels in those areas largely have not developed for this fire season. Conversely, areas where conditions were more moist last year, such as the Great Basin and north central Plains have an abundance of fine fuels as a residual component from last year. These abundant fine fuels also mostly avoided heavy snowpacks during the winter and are not compacted leaving them a readily available source of fuel for fire growth.

Dry winter conditions in Canada have led to some concerns over fuels heading into fire season. Portions of western Canada where geological barriers kept snowpacks either normal or below normal could see some quick snow melt which would lead to an early start in drying for high terrain heavier fuels. Also, as was stated

above, fine fuels across the prairie provinces did not receive much over winter precipitation, hence they are beginning the season both dry and uncompacted making them readily available for fires.

Fire Season Onset

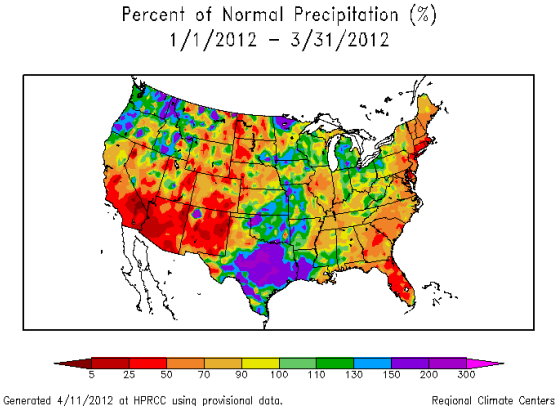
The variability in the spring weather prospects makes the onset of fire season difficult to predict. Normally, with similar fuel and drought conditions we would expect an early onset of the fire season. However, the possibility of a moist late spring pattern may mean that fire season is actually delayed as fine fuels struggle to dry from periodic rains and higher humidities.

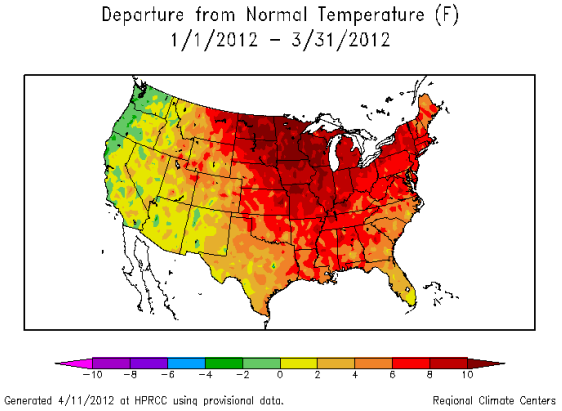
Southwest Monsoon

Early indications suggest monsoon onset may be slightly earlier and more erratic than normal. This may open the possibility of periods of increased significant fire potential both during the monsoonal period and as it recedes.

Climate Conditions and Forecasts

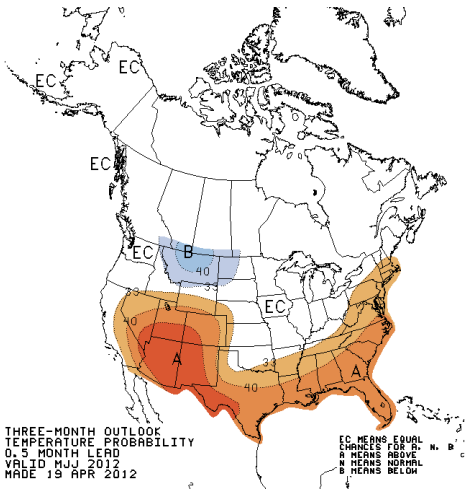
Climate patterns have been under the influence of La Niña conditions since the summer of 2010. After a brief period of El Niño/Southern Oscillation (ENSO) neutral conditions last fall, La Niña resumed during the winter. Wet early winter storms brought snow to most of the West but patterns changed to more classic La Niña conditions in the mid and late winter. Storms focused precipitation over the Northwest, Northern Rockies, and over the south central U.S. while most of the western states suffered large deficits. Conditions this spring have evolved to a more neutral pattern in the equatorial Pacific but the latest data and model projections indicate a higher probability of El Niño conditions this summer. Timing of this transition is still quite uncertain as is the strength of a potential El Niño. Historical analogs of similar years show distinctly different outcomes between a neutral pattern and an El Niño.

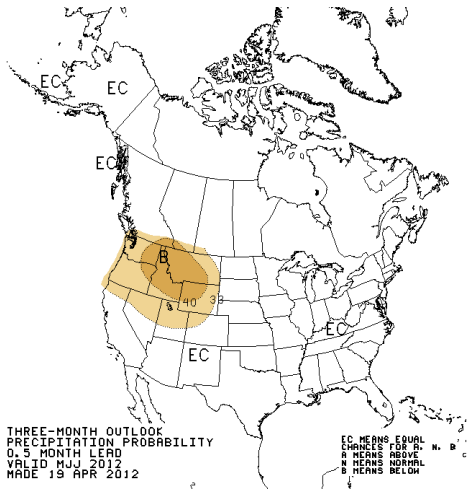


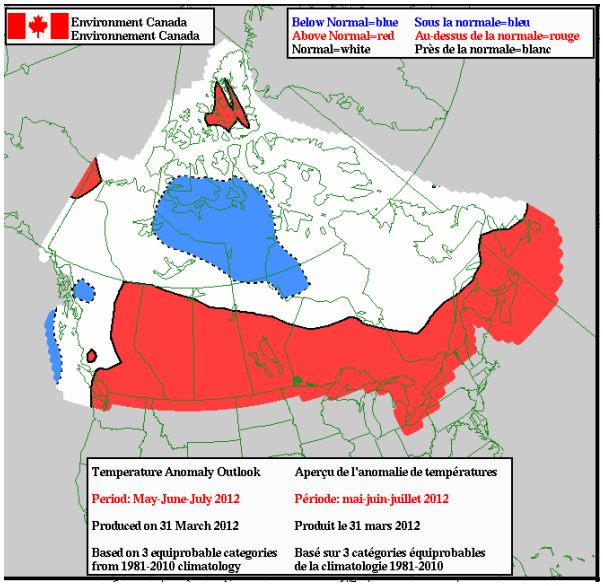


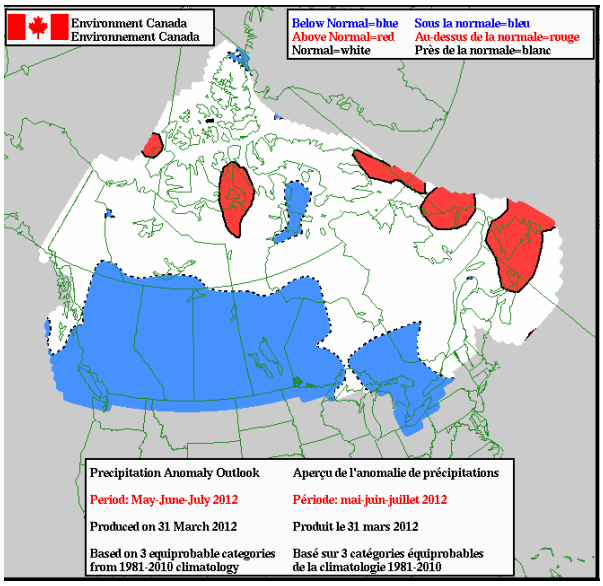
Temperature and Precipitation Forecasts

The latest climate outlooks from the National Weather Service's Climate Prediction Center are based on a neutral pattern through mid-summer. For the May to July period, this indicates above normal temperatures across the Southwest, the Great Basin, the South from Texas to Florida, and the Atlantic seaboard from Georgia to Maine. Precipitation probabilities for the same period favor below median precipitation across much of the Northwest and northern Rockies.









Canadian Forecast

As with much of the western U.S., western Canada is carrying some areas of drought from last fall that were made worse by an unusually warm winter. This is leading to a wide dispersion of high starting Drought Code values which significantly impact the forecasts for Canada, mainly increasing beginning conditions across the prairie provinces. Much of Canada is expected to see above normal temperatures as summer develops, while western Canada is expecting below normal precipitation for the rest of spring with the drier than normal conditions likely spreading through most of the east by the time summer begins. These factors will lead to above normal significant fire potential across some areas of western Canada. As summer begins much of Alberta and Saskatchewan and a portion of western Manitoba and southern Northwest Territories will see above normal significant fire potential in May and June. As these areas transition to normal potential a portion of the Yukon Territory will see above normal significant fire potential. Much like Alaska, the Yukon Territory will be significantly affected by the timing of the transition to El Niño and has the potential to develop large areas of above normal significant fire potential. Concurrently, British Columbia will likely develop above normal significant fire potential. This is especially likely in the interior regions of the province where below normal snowfall occurred over the winter. The above normal significant fire potential is expected to decrease in July in the Yukon Territory, but continue into August in British Columbia. Elsewhere in Canada expect near normal conditions. It should be noted that the potential for a significant fire season exists should the timing of the El Niño transition and the ongoing dryness match up in such a way that little or no precipitation is received across western Canada through the summer.

2012 Western U.S. and Canadian Seasonal Assessment Summary

The main objective of the seasonal assessment is to improve information available to fire management decision makers. Other objectives include:

- Improving communication and cooperation between fire professionals and climate scientists
- Improving interagency and inter-government (state, federal) information flow
- Fostering the exchange of ideas and techniques for assessing fire potential and applying climate forecasts and products to meet fire management requirements.

These assessments are designed to inform decision makers for proactive wildland and prescribed fire management, thus better protecting lives and property, reducing firefighting costs and improving firefighting efficiency.

Participants, in consultation with other specialists unable to attend the workshop, considered a variety of factors when making their assessments. Significant fire potential outlooks are primarily based on interactions between climate factors, fuel types and conditions, long-range predictions for climate and fire and the persistence of disturbance factors, such as drought and insect-induced forest mortality. The main product of the workshop was a map forecasting significant fire potential for the western United States, Alaska, Hawaii, and Canada.

The 2012 assessment was organized by the Predictive Services interagency group, the Climate Assessment for the Southwest (CLIMAS) at the University of Arizona, and the Program for Climate, Ecosystem and Fire Applications (CEFA) at the Desert Research Institute. The U.S. and Canadian Seasonal Assessment, included participants from Natural Resources Canada. Other participating agencies are listed below.

Participating Agencies / Organizations

Predictive Services
- National Interagency Coordination Center
- Eastern Area Coordination Center
- Southern Area Coordination Center
- Southwest Area Coordination Center
- Rocky Mountain Area Coordination Center
- Northern Rockies Area Coordination Center
- Eastern Great Basin Area Coordination Center
- Western great Basin Area Coordination Center
- Southern California Area Coordination Center
- Northern California Area Coordination Center
- Northwest Area Coordination Center
- Alaska Area Coordination Center

CLIMAS/University of Arizona
Desert Research Institute
CAP/Scripps Institution of Oceanography
Bureau of Land Management
National Parks Service
Bureau of Indian Affairs
US Fish and Wildlife Service
USDA Forest Service
National Oceanic and Atmospheric Administration
- National Weather Service
- Climate Prediction Center
- Storm Prediction Center
- Earth System Research Laboratory

National Association of State Foresters
- Numerous state wildfire agencies

Department of Defense
US Fire Administration
Natural Resources Canada

Resources Cited

US Drought Monitor: *http://droughtmonitor.unl.edu/*
Natural Resource Conservation Service, National Water and Climate Center: http://www.wcc.nrcs.usda.gov/
High Plains Regional Climate Center: *http://www.hprcc.unl.edu/*
Climate Prediction Center: *http://www.cpc.ncep.noaa.gov/*
Earth System Research Laboratory: *http://www.esrl.noaa.gov/*

For questions about this outlook please contact the National Interagency Fire Center at (208) 387-5050